

Atty Docket No. JCLA8999

Serial No. 10/064,649

**REMARKS****Present Status of the Application**

The Office Action rejected claims 1, 2, 5-11, 14-20, 23 and 24 under 35 U.S.C. 103(a), as being unpatentable over Dai (US Patent No. 5,882,996) in view of Zhang (US Patent No. 6,004,722). Claim 10 has been amended and claims 1-9 and 19-24 have been cancelled. This Amendment is promptly filed to place the above-captioned case in condition for allowance. No new matter has been added to the application by the amendments made to the claims, specification or otherwise in the application. After considering the following remarks, a notice of allowance is respectfully solicited.

**Discussion of 103 Rejections**

*Claims 1, 2, 5-11, 14-20, 23 and 24 were rejected under 35 U.S.C. 103(a), as being unpatentable over Dai (US Patent No. 5,882,996) in view of Zhang (US Patent No. 6,004,722).*

Claims 1-9 and 19-24 have been cancelled.

Applicants respectfully traverse the rejections for at least the reasons set forth below.

The independent claim 10 has been amended to more clearly define the method according to the present invention. Supporting grounds can be found at least in the paragraphs [0020] and [0029], and Figs. 1C and 2C.

Atty Docket No. JCLA8999

Serial No. 10/064,649

Applicant respectfully asserts that the method of forming the self-aligned dual damascene opening of a dual damascene structure claimed in the present invention patentably distinguishes over Dai's method.

As noted by the Office Action, Dai fails to teach a specific antireflective layer. Furthermore, Dai at least fails to disclose the method comprising conducting a single etching operation to transfer the dual damascene opening pattern to the dielectric layer using the patterned first photoresist layer, the patterned non-photosensitive layer and the patterned second photoresist layer as an etching mask, thereby forming a dual damascene opening in the dielectric layer, as recited in independent claim 10.

According to Dai's teachings, after the first exposure and development process of the second photoresist layer 170 and the second exposure and development process of the first photoresist layer 150, several (at least four) etching processes are required to be performed in order to form the dual damascene opening. As taught by Dai, for transferring the hole pattern, top oxide layer 140 is first etched by dry etching using Ar, CHF<sub>3</sub> and C<sub>4</sub>F<sub>0</sub>, and then the SiN layer 130 is etched by using Ar, CHF<sub>3</sub> and CF<sub>4</sub> in a HDP nitride etcher (Col. 7, lines 4-14, Fig. 3h). Then, for transferring the line pattern, a blanket resist dry etching using O<sub>2</sub>, He and CF<sub>4</sub> is performed to remove resist, as shown in Fig. 3i (Col. 7, lines 18-26). Next, an oxide etching using Ar, CHF<sub>3</sub> and C<sub>4</sub>F<sub>0</sub> is performed to the oxide layer in a HDP oxide etcher. Hence, not only Dai's method requires several etching processes for forming the opening, but also the patterned second photoresist layer 170 is removed midway (Fig. 3i).

Atty Docket No. JCLA8999

Serial No. 10/064,649

On the contrary, in the present invention, only a single etching operation is performed to transfer the dual damascene pattern to the dielectric layer, and the patterned first photoresist layer, the patterned non-photosensitive layer and the patterned second photoresist layer are used as an etching mask.

Therefore, Dai's teaching is obviously contrary to the above discussed feature recited in the independent claim 10 of the present invention.

Although the Office Action relied on Zhang for teaching the lacking features of Dai, Zhang fails to remedy the deficiencies of Dai. Zhang merely discloses a polymer made through addition polymerization reactions, and provides no teachings regarding the method comprising conducting a single etching operation to transfer the dual damascene opening pattern to the dielectric layer using the patterned first photoresist layer, the patterned non-photosensitive layer and the patterned second photoresist layer as an etching mask, thereby forming a dual damascene opening in the dielectric layer, as recited in independent claim 10.

As discussed above, both references, either alone or in combination, fail to teach or suggest each and every feature as claimed in the present invention. As a result, the combination of the cited references does not render the present invention obvious, as suggested by the Office Action. For at least the same reasons, dependent claims are submitted to patentably define over the combination of the cited references.

In view of the above amendment and discussions, reconsideration and withdrawal of the 103 rejections are respectfully requested.

Page 6 of 7

Atty Docket No. JCLA8999

Serial No. 10/064,649

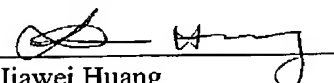
**CONCLUSION**

For at least the foregoing reasons, it is believed that all pending claims are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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